GENERAL BIOLOGY

REGULATION OF INTESTENIAL MICROFLORA VIA AN INNATE IMMUNE EFFECTOR MOLECULE

John J. Karijolich 600 Campus Dr. Ripon, WI. 54971KarijolichJ@ripon.edu, Nita H Salzman M.D. PH.D.* Medical College of Wisconsin8071 Watertown Plank Road Milwaukee, WI. 53226

The gastrointestinal tract comprises the body's largest mucosal surface and is in constant contact with food, microbes, and other environmental antigens. Microorganisms colonize the gut with total numbers exceeding 1 x 10^{14} in the adult human colon. The small intestine, because of its critical role in nutrient absorption, must be accessible to nutrients yet protected from harmful environmental stimuli and microbial infection. Despite the constant contact with bacteria, the small intestine normally shows minimal evidence of inflammation, suggesting that there are highly effective non-inflammatory defenses of this mucosal surface. Antimicrobial peptides and proteins secreted by the mucosa comprise a portion of this defense. The focus of this study is to investigate the role of antimicrobial peptide defensins in regulating the composition of the colonizing intestinal microflora. The HD5 transgenic mouse model that expresses an endogenous human intestinal defensin in the mouse small intestine was studied. The composition of the commensal microflora between HD5 transgenic mice and wild type littermate controls was compared using florescent in situ hybridization (FISH) and temporal temperature gradient gel electrophoresis (TTGE). Both FISH and TTGE showed qualitative and quantitative differences in colonizing bacteria between the HD5 transgenic mice and wild type mice. The differences in microbial composition noted suggest that innate immune effector molecules may have a significant role in the regulation of the microbial ecology at mucosal surfaces.